Problem 1:
Given the sequence 1, 7, 49, 343, ….,
   a) Find the function sequence representation f(n)
   b) Find the recursive representation $a_n$
   c) Formulate the appropriate theorem statement to prove that $a_n = f(n)$ using PMI.

Problem 2:
Theorem: Given the Fibonacci sequence $f_n$, $f_1 + f_3 + f_5 + \ldots + f_{2n-1} = f_{2n}$ $\forall n \in \mathbb{N}$

Problem 3:
Theorem: Given the recursive sequence $a_1 = a_2 = 1, a_n = 2a_{n-1} + 3a_{n-2}$ for $n > 2$, Then $a_n < 2(3^{n-2})$ for all natural number $n > 2$. 